PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Shuuji YANO, et al.

Docket No: Q68759

Appln. No.: 10/084,054

Group Art Unit: 2871

Confirmation No.: 6446

Examiner: George Y. WANG

Filed: February 28, 2002

For: OPTICALLY COMPENSATORY POLARIZER AND LIQUID-CRYSTAL DISPLAY DEVICE

SUBMISSION OF APPEAL BRIEF

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith please find an Appeal Brief. A check for the statutory fee of $500.00 is attached. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,

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WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: January 10, 2005

Attorney Docket No.: Q68759

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APPEAL BRIEF UNDER 37 C.F.R. § 41.37

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an Appeal from the final rejection of August 10, 2004 (Paper No. 080904) of claims 1 and 2 in Application No. 10/084,054. In accordance with the provisions of 37 C.F.R. § 1.192, Appellant submits the following:

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I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Nitto Denko Corporation. Assignment of the application was submitted to the U.S. Patent and Trademark Office on February 28, 20002, and recorded on the same date at Reel 012650, Frame 0373.

II. RELATED APPEALS AND INTERFERENCES

There are no known appeals or interferences that will affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-2 are pending in the application. As set forth in the Final Office Action dated August 10, 2004, claims 1 and 2 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshimi et al. (U.S. Patent No. 5,245,456; hereafter "Yoshimi") in view of Michihata et al. (U.S. Patent No. 6,320,042; hereafter "Michihata") and Ishii et al. (U.S. Publication No. 2003/0049459; hereafter "Ishii"). All of the rejected claims are set forth in the attached Appendix.

IV. STATUS OF AMENDMENTS

No claim amendments were requested subsequent to the Final Office Action of August 10, 2004.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The claimed invention relates to an optically compensatory polarizer (7) comprising a polarizer (6) and at least one optically compensating film (4). (page 6, lines 3-5; Fig. 1). The polarizer includes an absorption type polarizing element (1), and transparent protective layers (2, 3) provided on opposite sides of the absorption type polarizing element (7). (page 6, lines 8-10). Each of the transparent protective layers (2, 3) exhibits an in-plane retardation of not larger than 10 nm and a thicknesswise retardation in a range of from 30 to 70 nm (page 6, lines 10-13). The at least one optically compensating film (4) is laminated on at least one of opposite surfaces of the polarizer (6) so that a slow axis of each optically compensating film (4) crosses an absorption axis of the polarizer (6) perpendicularly. (page 6, lines 4-7). The optically compensating film (4) exhibits an in-plane retardation in a range of from 80 to 200 nm and $Nz = (nx - nz)/(nx - ny)$ in a range of from –0.2 to 0.2 in which nz is a refractive index in a direction of a Z axis expressing a direction of the thickness of the optically compensating film (4), nx is a refractive index in a direction of an X axis expressing a direction of the optically compensating film (4) in a sheet plane perpendicular to the Z axis, ny is a refractive index in a direction of a Y axis expressing a direction of the optically compensating film (4) perpendicular both to the Z axis and to the X axis, and nx and ny satisfy the relation $nx > ny$. (page 6, lines 13-15; and page 6, line 24 - page 7, line 12).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Rejection of claims 1 and 2 under 35 U.S.C. § 103(a) as being unpatentable over Yoshimi in view of Michihata and Ishii.

VII. ARGUMENT

It is respectfully submitted that claims 1 and 2 are patentable over Yoshimi in view of Michihata and Ishii at least the following reasons.

With regard to the claim 1, the Examiner asserts that Yoshimi discloses all of the features of the claimed invention except for transparent protective layer each exhibiting an in-plane retardation of not larger than 10 nm and a thickness retardation in the range of 30 to 70 nm. However, the Examiner cites Ishii for allegedly disclosing a transparent protective layer having the claimed in-plane retardation and Michihata for allegedly disclosing a transparent protective layer having the claimed thicknesswise retardation. Further, the Examiner asserts that:

> [i]t would have been obvious ... to have integrated the aforementioned specifics of the transparent protective layers [of Ishii and Michihata into the protective layers of Yoshimi] since one would be motivated to minimize foreign particles (Michihata, col. 1, lines 42-49), improve durability and polarization efficiency by preventing drop in polarization efficiency, hue shift, and light leakage (Ishii, [0001], [0008], [0011]-[0015]). [1]

Appellant respectfully submits that claim 1 is patentable over the cited references because one of ordinary skill in the art would not have been motivated to combine and modify the cited references to produce the claimed invention.

Yoshimi discloses a birefringent film suitable for the compensation of birefringence, and a retardation film, elliptically polarizing plate, and liquid crystal display, all using the birefringent

[1] August 10, 2004 Office Action at page 3.

film.[2] As shown in Figures 1 and 2, a retardation film 3 may be formed by a single birefringent film 1 or a laminate of two birefringent films 1 secured by a transparent adhesive layer 2, wherein the retardation film 3 satisfies $0< N_z <1$ provided that $n_x > n_y$.[3] In order for a retardation film 3 to be used for phase difference compensation to prevent coloring of liquid crystal cells, thereby attaining black-and-white display, the retardation film 3 should satisfy the equation: 100 nm $< (n_x - n_y)d <$ 1,000 nm, wherein d is the thickness of the plate, i.e., should produce a phase difference (retardation) of from 100 to 1,000 nm.[4] As shown in Figure 3, an elliptically polarizing plate comprises a laminate of the above-described retardation film 3 with a polarizing plate 4 wherein an adhesive layer 2 is provided on the outside of the retardation film 3 in order that the elliptically polarizing plate be bonded to a liquid crystal cell or the like.[5] As shown in Figure 5, a liquid crystal display includes one elliptically polarizing plate 5 disposed on one side of the liquid crystal cell 6, and a polarizing film 4 disposed on the other side of the liquid crystal cell 6.[6]

Accordingly, Yoshimi discloses an elliptically polarizing plate wherein a polarizing plate and a retardation/birefringent film are laminated. Although Yoshimi refers to characteristics of the birefringent/retardation film 3 (which the Examiner apparently is alleging corresponds to the claimed optically compensating film), the cited reference does not disclose any features of a

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[2] Yoshimi at col. 1, lines 9-14.

[3] Yoshimi at col. 4, lines 54-64.

[4] Yoshimi at col. 5, lines 35-41.

[5] Yoshimi at col. 5, lines 42-52.

[6] Yoshimi at col. 6, lines 14-21.

protective layer. Further, although Yoshimi discusses the improvement of the optical characteristics in the combination of the liquid crystal cell with the birefringent film, the cited reference does not disclose the characteristics of polarizer.

Both Michihata and Ishii disclose a protective film for a polarizing element. Michihata controls average molecular weight and molecular weight distribution of cellulose triacetate and suppresses the contained impurities amount to reduce the number of glittering points due to foreign materials and improve the processability (tractability).[7] Michihata also discloses in-plane retardation not larger than 30 nm.[8] Ishii discloses a protective film formed of cyclic olefin resin used in a polarizing plate wherein an amount of change of in-plane retardation 5 nm or less at 24 hours in an atmosphere of 80° C (exemplary retardation values of the protective film are shown in Table 1 of Ishii).[9]

As discussed in the "Background of the Invention" section of the present application, in general, when two polarizing plates (polarizers) are laminated in the crossed-Nicol (transmission axes of two polarizing plates are perpendicular) and the light-transmissive characteristics is measured, there is no light leakage in the case of viewing from the normal direction or in the case of viewing from the direction oblique against the plane of the display but in parallel to the optical axis. However, when viewed from the oblique direction at the azimuth shifted from the direction of the optical axis, the apparent angle between two optical axes in two polarizing plates

[7] Michihata at col. 1, lines 42-65.

[8] Michihata at col. 8, line 41

[9] Ishii at Abstract.

is changed geometrically, and light leakage increases. This is also caused by the wavelength dispersion of the retardation. Further, leakage light is colored.

According to the present invention, by means of (i) relationship between the absorption axis of the polarizer and the slow axis of the optically compensating film, and (ii) the transparent protective film and optically compensating film with specific optical characteristics, the negative effects due to the wavelength dispersion are reduced to thereby prevent coloring of the leaked light, and light leakage is reduced even viewing from the oblique direction.[10]

The Examiner, citing col. 1, lines 42-49 of Michihata, alleges that Michihata provides motivation for integrating the claimed thicknesswise retardation of transparent protective layers into transparent protective layers of the Yoshimi because "one would be motivated to minimize foreign particles". However, nowhere does Michihata teach that the disclosed thicknesswise retardation (25 to 150 nm) minimizes foreign particles. Rather, Michihata (col. 1, line 42 - col. 49) teaches that minimization of foreign particles is obtained by utilizing a cellulose ester film, which is prepared by employing cotton liter or wood pulp as the raw material, having a value of weight average molecular weight Mw/number average molecular weight Mn of 3.5 to 5.0. That is, the thicknesswise retardation does not affect the surface quality (the presence of foreign particles) of the protective film. Thus, Appellant respectfully submits that the Examiner's alleged motivation for modifying Yoshimi based on Michihata is improper since the cited benefits of Michihata are not related to the disclosed exemplary retardation values.

[10] See paragraph bridging pages 4 and 5 of the present application.

The Examiner alleges that Ishii provides motivation from integrating the claimed in-plane retardation of transparent protective layers into transparent protective layers of the Yoshimi because one would be motivated to improve durability and polarization efficiency by preventing drop in polarization efficiency, hue shift, and light leakage (citing paragraphs [0001], [0008], [0011]-[0015] of Ishii). However, as discussed above, Ishii teaches utilizing a protective film formed of cyclic olefin resin to thereby produce a polarizing plate wherein an amount of change of in-plane retardation is 5 nm or less at 24 hours in an atmosphere of 80° Celsius (176° Fahrenheit). That is, Ishii teaches improving durability and polarization efficiency by minimizing the change of in-plane retardation (i.e., limiting the change to 5 nm or less) under high temperature conditions. Thus, Ishii is not concerned with the actual value of the in-plane retardation but rather the change or shift of the value of the in-plane retardation over time due to exposure to extreme environmental conditions. That is, Ishii does not teach durability and polarization efficiency are improved by an in-plane retardation value of not larger than 10 nm, as claimed. Thus, Appellant respectfully submits that the Examiner's alleged motivation for modifying Yoshimi based on Ishii is also improper.

As discussed above, Yoshimi discloses a retardation film to improve coloring due to the change of the viewing angle against the liquid crystal cell, Michihata discloses a method for minimizing foreign particles in a protective film, and Ishii discloses using cyclic olefin materials for preparing a durable polarizing plate without degradation in performance under high temperature and humidity conditions. However, none of cited references discloses or teaches to suppress light leak and coloring of leaked light by the combination of a transparent protective film and an optically compensating film with particular optical characteristics as taught by the

present invention. That is, each of the cited references is different in both use and object from the present invention which discloses an optically compensatory polarizer which functions in total by controlling the characteristics of the protective layers and the optically compensating film within the recited range.

In the "Response to Arguments" section of the August 10, 2004 Office Action, the Examiner states:

> Applicant's main argument is that "none of the cited references discloses or teaches to suppress light leak and coloring of leaked light by the combination of a transparent protective film and an optically compensating film with particular optical characteristics as taught by the present invention." However, Examiner disagrees because nowhere in Claim 1 or 2 are these features recited.[11]

However, contrary to the Examiner's mischaracterization, Applicant's argument is that one of ordinary skill in the art would not have been motivated to motivated to modify the birefringent film of Yoshimi based on the teachings of Ishii and Michihata to produce an optically compensatory polarizer comprising a transparent protective film and an optically compensating film having the claimed optical characteristics.

The Examiner further responds to the arguments for patentability by stating that:

> Applicant further argues that the combination of the Michihata and Ishii references to Yoshimi are based on improper motivation. Examiner disagrees. While it is true that Michihata also discusses the use of a cellulose ester film, Applicant's assertion that the minimization of foreign particles is obtained by this layer is not taught in col. 1, lines 42-49. Furthermore, Applicant's argument that the Ishii reference is not concerned with the actual value of the in-plan retardation but rather the change or shift of the value of the in-plane retardation over time due to exposure to extreme environmental conditions does not render the motivation inoperative. Rather, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot

[11] August 10, 2004 Office Action at page 4, third full paragraph.

> be the basis for patentability when the differences would otherwise be obvious. See Ex parte Obiaya, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Furthermore, the feature of durability and polarization efficiency are nowhere to be found in Applicant's claim language.[12]

However, as discussed above, the Examiner's alleged motivation for modifying the birefringent film of Yoshimi based on the teachings of Ishii and Michihata is not supported by the cited references. The Examiner's counterpoints regarding Michihata are not understood since the reference's teachings are directed entirely to the formation of cellulose ester film (i.e., a single layer) to employed as protective film for a polarizing plate. Likewise, the Examiner's counterpoints regarding Ishii are not understood since the alleged motivation (i.e., "improve durability and polarization efficiency by preventing drop in polarization efficiency, hue shift, and light leakage") for modifying Yoshimi based on Ishii which the Examiner is relies on is entirely directed to the minimization of the change of in-plane retardation (i.e., limiting the change to 5 nm or less) under high temperature conditions, not the actual values of the in-plane retardation. In other words, the purported benefits disclosed by Ishii and cited by the Examiner do not provide any motivation for utilizing a specific in-plane retardation value.

In the present case, the Examiner does not point out any portion of Ishii and Michihata which supports modifying Yoshimi's device to produce the claimed invention. Nor has the Examiner has provided any objective reasoning why one of ordinary skill in the art would have been motivated to combine and modify the cited references.

In view of the above, Appellant respectfully submits that independent claim 1, as well as dependent claim 2, should be allowable because one of ordinary skill in the art would not have

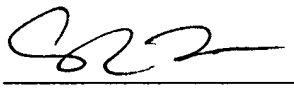
[12] Office Action at paragraph bridging pages 4 and 5.

been motivated to modify the device of Yoshimi based on the teachings of Ishii and Michihata to produce the claimed invention.

Unless a check is submitted herewith for the fee required under 37 C.F.R. §41.37(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Date: January 10, 2005

Attorney Docket No.: Q68759

CLAIMS APPENDIX

CLAIMS 1 and 2 ON APPEAL:

1. (Original) An optically compensatory polarizer comprising:

a polarizer including an absorption type polarizing element, and transparent protective layers provided on opposite sides of said absorption type polarizing element, each of said transparent protective layers exhibiting an in-plane retardation of not larger than 10 nm and a thicknesswise retardation in a range of from 30 to 70 nm; and

at least one optically compensating film laminated on at least one of opposite surfaces of said polarizer so that a slow axis of each optically compensating film crosses an absorption axis of said polarizer perpendicularly, said optically compensating film exhibiting an in-plane retardation in a range of from 80 to 200 nm and $Nz = (nx - nz)/(nx - ny)$ in a range of from –0.2 to 0.2 in which nz is a refractive index in a direction of a Z axis expressing a direction of the thickness of said optically compensating film, nx is a refractive index in a direction of an X axis expressing a direction of said optically compensating film in a sheet plane perpendicular to said Z axis, ny is a refractive index in a direction of a Y axis expressing a direction of said optically compensating film perpendicular both to said Z axis and to said X axis, and nx and ny satisfy the relation $nx > ny$.

2. (Original) A liquid-crystal display device comprising:

a liquid-crystal cell; and

one optically compensatory polarizer according to claim 1 and provided on at least one of opposite surfaces of said liquid-crystal cell.

EVIDENCE APPENDIX:

There has been no evidence submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132 or any other similar evidence.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings.